

**CLAIMS**

1. A method for charging a set of batteries, comprising the steps  
of:  
charging a first battery with a charging current from a power  
5 supply;  
monitoring a parameter of the first battery during said charging  
step; and  
selectively diverting to charge a second battery at least a portion  
of the charging current used to charge the first battery, wherein the first and  
10 second batteries are charged simultaneously after the parameter of the first  
battery reaches a predetermined threshold.
2. The method according to claim 1, wherein the parameter is at  
least one of a battery voltage and a battery temperature rate.
- 15 3. The method according to claim 1, wherein the predetermined  
threshold is at least one of a predetermined battery voltage and a  
predetermined battery temperature rate.
- 20 4. The method according to claim 1, wherein the charging current  
used to charge the first battery has a maximum value until the parameter of  
the first battery reaches the predetermined threshold.

5. The method according to claim 4, further comprising the step of decreasing the charging current used to charge the first battery after the parameter of the first battery reaches the predetermined threshold, wherein the charging current used to charge the first battery decreases from a maximum value to a minimum value.

6. The method according to claim 5, wherein the charging current used to charge the first battery decreases to at least one intermediate value as the charging current used to charge the first battery decreases to the minimum value.

7. The method according to claim 6, wherein the portion of the charging current that is diverted to charge the second battery has a value of the difference of the maximum value of the charging current previously used to charge the first battery and the intermediate value of the charging current used to charge the first battery.

8. The method according to claim 7, further comprising the step of increasing the portion of the charging current that is diverted to charge the second battery, wherein the portion of the charging current that is diverted reaches the maximum value when the charging current used to charge the first battery reaches the minimum value.

9. The method according to claim 1, wherein the first battery is coupled to a portable electronic device and the second battery is attachable to the portable electronic device, wherein the method further comprises the step of coupling the portable electronic device and the second battery to
- 5 corresponding receptacles of a dual pocket charger.

10. A method of charging a set of batteries, comprising the steps of:  
charging a first battery with a charging current from a power  
supply;  
5 monitoring the charging current used to charge the first battery;  
and  
in response to a change in a magnitude of the charging current,  
selectively diverting to charge a second battery at least a portion of the  
charging current used to charge the first battery, wherein the first and second  
10 batteries are charged simultaneously after the change in the magnitude of the  
charging current used to charge the first battery.

11. A system for charging a set of batteries, comprising:  
at least one receptacle for charging a first battery with a  
charging current from a power supply; and  
5 a processing unit, wherein the processing unit is programmed  
to:  
monitor a parameter of the first battery as the first battery  
is being charged with the charging current; and  
selectively divert to charge a second battery at least a  
10 portion of the charging current used to charge the first battery when the  
processing unit detects that the parameter of the first battery reaches a  
predetermined threshold, wherein the first and second batteries are charged  
simultaneously following the detection.
12. The system according to claim 11, wherein the parameter is at  
15 least one of a battery voltage and a battery temperature rate.
13. The system according to claim 11, wherein the predetermined  
threshold is at least one of a predetermined battery voltage and a  
20 predetermined battery temperature rate.
14. The system according to claim 11, wherein the charging current  
used to charge the first battery has a maximum value until the processing unit

detects that the parameter of the first battery has reached the predetermined threshold.

15. The system according to claim 14, wherein the processing unit  
5 is further programmed to decrease the charging current used to charge the first battery after the processing unit detects that at least one of the battery voltage and the battery temperature of the first battery reaches the predetermined threshold, wherein the processing unit decreases the charging current used to charge the first battery from a maximum value to a minimum  
10 value.

16. The system according to claim 15, wherein the processing unit is further programmed to decrease to at least one intermediate value the charging current used to charge the first battery as the charging current used  
15 to charge the first battery decreases to the minimum value.

17. The system according to claim 16, wherein the portion of the charging current that the processing unit diverts to charge the second battery has a value of the difference of the maximum value of the charging current  
20 previously used to charge the first battery and the intermediate value of the charging current used to charge the first battery.

18. The system according to claim 17, wherein the processing unit is further programmed to increase the portion of the charging current that is

diverted to charge the second battery, wherein the portion of the charging current that is diverted reaches the maximum value when the charging current used to charge the first battery reaches the minimum value.

- 5           19.    The system according to claim 11, further comprising a second receptacle, wherein the first battery is coupled to a portable electronic device and the second battery is attachable to the portable electronic device, wherein the portable electronic device and the second battery are respectively coupled to the first receptacle and the second receptacle, and wherein the
- 10   first and second receptacles are part of a dual pocket charger.

20. A charger for charging a set of batteries, comprising:
- at least one receptacle for charging a first battery with a charging current from a power supply; and
- 5 a processor, wherein the processor is programmed to:
- monitor the charging current used to charge the first battery; and
- selectively divert to charge a second battery at least a portion of the charging current used to charge the first battery in response to
- 10 a change in the magnitude of the charging current used to charge the first battery, wherein the first and second batteries are charged simultaneously after the change in the magnitude of the charging current used to charge the first battery.

15